

Corinne D. Scown

CONTACT INFORMATION	1 Cyclotron Road, 90-2012 Lawrence Berkeley National Lab Berkeley, CA 94720 USA	<i>Phone:</i> (510) 486-4507 <i>E-mail:</i> cdscown@lbl.gov <i>Website:</i> www.cscown.com
	5885 Hollis Street, 978-4464B Joint BioEnergy Institute Emeryville, CA 94608 USA	<i>Phone:</i> (510) 486-7489
POSITION	Staff Scientist, Deputy Group Leader Sustainable Energy Systems Group Energy Analysis & Environmental Impacts Division Energy Technologies Area Lawrence Berkeley National Laboratory	Director of Technoeconomic Analysis Joint BioEnergy Institute
RESEARCH INTERESTS	Life-cycle assessment, technoeconomic modeling, quantifying the environmental impacts of energy production, economic input-output models, linking air quality with life-cycle assessment, interaction between science and policy/decision-making	
EDUCATION	University of California, Berkeley, USA	
	Ph.D., Civil Engineering, December 2010 <ul style="list-style-type: none"> • Dissertation Title: “Life-Cycle Water Impacts of U.S. Transportation Fuels” • Advisor: Arpad Horvath 	
	M.S., Civil Engineering, May 2008	
	Carnegie Mellon University, Pittsburgh, Pennsylvania USA	
	B.S., Civil Engineering, December, 2006 double major in Engineering and Public Policy	
PEER-REVIEWED PUBLICATIONS	Hanna Breunig*, Ling Jin, Alastair Robinson, Corinne D. Scown (2017). “Bioenergy Potential from Food Waste in California.” <i>Environmental Science & Technology</i> , 51(3), 1120-1128. DOI: 10.1021/acs.est.6b04591	
	Jian Sun, N.V.S.N. Murthy Konda, Jian Shi, Ramakrishnan Parthasarathi, Tanmoy Dutta, Feng Xu, Corinne D Scown , Blake Simmons, Seema Singh* (2016). “CO2 Enabled Process Consolidation for the Production of Cellulosic Ethanol in Bionic Liquids.” <i>Energy & Environmental Science</i> , 9(9), 2822-2834. DOI: 10.1039/C6EE00913A	
	Sankaranarayanapillai Shylesh, Amit A. Gokhale, Corinne D. Scown , Daeyoup Kim, Alexis T. Bell* (2016). “From Sugars to Wheels: Conversion of Ethanol to 1,3-Butadiene Over Metal Promoted Magnesium-Silicate Catalysts.” <i>ChemSusChem</i> , 9(12), 1462-1472. DOI: 10.1002/cssc.201600195	
	Michael J. Liszka, Aram Kang, NVSN Murthy Konda, Kim Tran, Corinne D. Scown , John M. Gladden, Seema Singh, Jay D. Keasling, Taek Soon Lee, Blake A. Simmons, Kenneth L. Sale* (2016). “Switchable Ionic Liquids Based on Di-Carboxylic Acids for One-Pot Pretreatment, Saccharification and Fermentation of Biomass to an Advanced Biofuel.” <i>Green Chemistry</i> , 18, 4012-4021. DOI: 10.1039/C6GC00657D	

Roger Sathre*, Hanna Breunig, Jeffery Greenblatt, Peter Larsen, Eric Masanet, Thomas McKone, Nigel Quinn, **Corinne D. Scown** (2016). “Spatially-explicit water balance implications of carbon capture and sequestration.” *Environmental Modelling & Software*, 75, 153-162. DOI: 10.1016/j.envsoft.2015.10.011

Feng Xu, Jian Sun, Suryanarayana Konda Naga Venkata, Jian Shi, Tanmoy Dutta, **Corinne D. Scown**, Blake A. Simmons, Seema Singh* (2016). “Transforming biomass conversion with ionic liquids: process intensification and the development of a high-gravity, one-pot process for the production of cellulosic ethanol.” *Energy & Environmental Science*, 9, 1042-1049. DOI: 10.1039/C5EE02940F

Marcelle C. McManus*, Caroline M. Taylor*, Alison Mohr, Carly Whittaker, **Corinne D. Scown**, Aiduan Li Borrión, Neryssa Glithero, Yao Yin (2015). “Challenge Clusters Facing LCA in Sustainability Decision-making - What We Can Learn From Biofuels.” *International Journal of Life Cycle Assessment*, 20(10), 1399-1414. DOI: 10.1007/s11367-015-0930-7

Sanil Sreekumar, Madhesan Balakrishnan, Konstantinos Goulas, Gorkem Gunbas, Amit A. Gokhale, Lin Louie, **Corinne D. Scown***, Alexis T. Bell* and F. Dean Toste* (2015). “Upgrading Lignocellulosic Products to Drop-In Biofuels via Dehydrogenative Cross-Coupling and Hydrodeoxygenation Sequence.” *ChemSusChem*, 8(16), 2609-2614. DOI: 10.1002/cssc.201500754

Madhesan Balakrishnan, Eric R. Sacia, Sanil Sreekumar, Gorkem Gunbas, Amit A. Gokhale, **Corinne D. Scown***, F. Dean Toste*, Alexis T. Bell* (2015). “Novel Pathways for Fuels and Lubricants from Biomass Optimized Using Life Cycle Assessment.” *Proceedings of the National Academy of Sciences*, 112(25), 7645-7649. DOI: 10.1073/pnas.1508274112

Roger Sathre*, **Corinne D. Scown**, Olga Kavvada, Thomas P. Hendrickson (2015). “Energy and Climate Effects of Second-life Use of Electric Vehicle Batteries in California Through 2050.” *Journal of Power Sources*, 288, 82-91. DOI: 10.1016/j.jpowsour.2015.04.097

Thomas P. Hendrickson*, Olga Kavvada, Nihar Shah, Roger Sathre, **Corinne D. Scown*** (2015). “Life-cycle Implications and Supply Chain Logistics of Electric Vehicle Battery Recycling in California.” *Environmental Research Letters*, 10(1), 014011. DOI: 10.1088/1748-9326/10/1/014011

Roger Sathre*, **Corinne D. Scown**, William Morrow, John Stevens, Ian Sharp, Joel Ager, Karl Walczak, Frances Houle, Jeffrey B. Greenblatt* (2014). “Life-cycle Net Energy Analysis of Large-scale Hydrogen Production via Photo-electrochemical Water-splitting.” *Energy & Environmental Science*, 7(10), 3264-3278. DOI: 10.1039/C4EE01019A

Corinne D. Scown*, Amit Gokhale, Paul Willems, Arpad Horvath, Thomas E. McKone (2014). “The Role of Lignin in Driving Down Life-cycle Carbon Emissions, Water Use, and Cost for U.S. Cellulosic Biofuels.” *Environmental Science & Technology*, 48(15), 8446-8455. DOI: 10.1021/es5012753

Corinne D. Scown*, Michael Taptich, William W. Nazaroff, Arpad Horvath, Thomas E. McKone (2013). “Achieving Deep Cuts in the Carbon Intensity of US Automobile Transportation by 2050: Complementary Roles for Electricity and Biofuels.” *Environmental Science & Technology*, 47(16), 9044-9052. DOI: 10.1021/es4015635

Corinne D. Scown*, William W. Nazaroff, Umakant Mishra, Bret Strogon, Agnes B. Lobscheid, Eric Masanet, Nicholas J. Santero, Arpad Horvath, Thomas E. McKone (2012). “Lifecycle Greenhouse Gas Implications of US National Scenarios for Cellulosic Ethanol Production.” *Environmental Research Letters*, 7(1) 014011. DOI:10.1088/1748-9326/7/1/014011

Corinne D. Scown*, Arpad Horvath, Thomas E. McKone (2011). “Water Footprint of U.S. Transportation Fuels.” *Environmental Science & Technology*, 45(7), 2541-2553. Also published in *Environmental Science & Technology* virtual issue entitled “Water-Energy Nexus” 1(1). DOI: 10.1021/es102633h

Thomas E. McKone*, William W. Nazaroff, Peter Berck, Maximilian Auffhammer, Tim Lipman, Margaret S. Torn, Eric Masanet, Agnes Lobscheid, Nicholas Santero, Umakant Mishra, Audrey Barrett, Matthew Bomberg, Kevin Fingerma, **Corinne Scown**, Bret Strogon, Arpad Horvath (2011). “Grand Challenges for Life-Cycle Assessment of Biofuels.” *Environmental Science & Technology*, 45(5), 1751-1756. DOI: 10.1021/es103579c

Ping Chen, **Corinne Scown***, H. Scott Matthews, James H. Garrett, Jr., Chris Hendrickson (2009). “Managing Critical Infrastructure Interdependence through Economic Input-Output Methods.” *ASCE Journal of Infrastructure Systems*, 15(3), 200-210. DOI: 10.1061/(ASCE)1076-0342(2009)15:3(200)

Chung Yan Shih, **Corinne D. Scown**, Lucio Soibelman, H. Scott Matthews*, James H. Garrett, Jr., Keith Dodrill, Sandra McSurdy (2009). “Data Management for Geospatial Vulnerability Assessment of Interdependencies in US Power Generation.” *ASCE Journal of Infrastructure Systems*, 15(3), 179-189. DOI: 10.1061/(ASCE)1076-0342(2009)15:3(179)

*Corresponding author(s)

TECHNICAL
REPORTS AND
BOOK CHAPTERS

N.V.S.N. Murthy Konda, Dominique Loque, and **Corinne D. Scown**. Towards the design of economically sustainable lignocellulosic biorefineries. Book chapter in *Biomass Pretreatment and Conversion Processes* (Eds.) Rajeev Kumar, Seema Singh, and Venkatesh Balan. Nova Publishing Science Publishers. Accepted, May 2016.

Roger Sathre, Hanna Breunig, Peter Larsen, Eric Masanet, Thomas McKone, Nigel Quinn, **Corinne Scown** (2012). *Spatially-Explicit Impacts of Carbon Capture and Sequestration on Water Supply and Demand*. Lawrence Berkeley National Laboratory, Berkeley, CA.

Iain S. Walker, Sara Al-Beaini, Samuel Borgeson, Brian Coffey, David Gregory, Kyle Konis, **Corinne Scown**, Jelena Simjanovic, John Stanley, Bret Strogon (2009). *Feasibility of Achieving Net-Zero-Energy Net-Zero-Cost Homes*. Lawrence Berkeley National Laboratory, Berkeley, CA, LBNL 2067E.

GRANTS

Paths to Sustainable Distributed Generation through 2050: Matching Local Waste Biomass Resources with Grid, Industrial, and Community Needs **2015-present**
Amount: \$1.5M, Agency: California Energy Commission
Role: Lead PI

Enabling Anaerobic Digestion Deployment for Municipal Solid Waste-to-Energy **2015-present**
Amount: \$4.3M, Agency: California Energy Commission
Role: Co-PI

Synthesis of bio-inspired adaptive membranes for direct capture of CO₂ from biogas **2014-2015**
Amount: \$221K, Agency: LBNL Laboratory Directed Research and Development
Role: Co-PI

Large-scale Recycling of California's PEV Battery Packs **2013-2015**
 Amount: \$250K, Agency: California Energy Commission
 Role: Lead PI

Life-cycle Assessment **2012-2015**
 Amount: \$150K, Agency: LBNL Program Development Funds
 Role: Lead PI

Building Life-cycle Assessment Capacity for Advanced Biofuels **2013-present**
 Amount: \$565K, Agency: Energy Biosciences Institute
 Role: Co-PI

The Future of Drop-in Fuels **2013-present**
 Amount: \$400K, Agency: California Air Resources Board
 Role: Technical Lead

RESEARCH
EXPERIENCE

Joint BioEnergy Institute, Emeryville, California USA
Director of Technoeconomic Analysis **2015-present**
 Leader of JBEI's technoeconomic modeling and life-cycle assessment research in collaboration with experimental and computational researchers within JBEI and the Advanced Biofuel Process Demonstration Unit (ABPDU). 40% time appointment, remaining 60% time spent on other LBNL projects.

Lawrence Berkeley National Lab, Berkeley, California USA
Deputy Group Leader, Sustainable Energy Systems Group **2015-present**
 Serving in the leadership for the Sustainable Energy Systems group at LBNL, supervising fellow scientists as well as postdocs and grad students. Coordinating with group and division leadership to ensure high-quality scientific output, funding stability, and career development for members.

Research Scientist **2014-present**
 Leading a variety of projects, including state-funded research on drop-in biofuels and electric vehicle battery recycling as well as biofuels research funded by the Energy Biosciences Institute.

Principal Scientific Engineering Associate **2012-2013**
 Team: Energy & Environmental Analysis Team, Carbon Cycle 2.0
 Research on scenario and model development for energy efficient buildings, biomass for energy applications, photovoltaics, and carbon capture and sequestration.

University of California, Berkeley, USA
Postdoctoral Scholar/Research Engineer **2011-present**
 Project Title: Life-Cycle Environmental and Economic Decision-Making for Alternative Biofuels
 Advisor: Professor Arpad Horvath Primary objective is to develop an understanding of the broad environmental and economic impacts of producing biofuels with respect to other transportation fuel alternatives such as petroleum-based fuels and electricity. Deliverables include a carbon assessment tool and a series of national biofuel production scenarios.

Postdoctoral Scholar **2010-2011**
 Project Title: Life-Cycle Energy Assessment of Water and Waste Water Systems in California
 Advisor: Professor Arpad Horvath Primary objective is to develop a tool for assessing the greenhouse gas and water resource impacts of water supply and wastewater treatment in California.

Graduate Student Researcher **2007-2010**
 Project Title: Life-Cycle Water Impacts of U.S. Transportation Fuels
 Advisor: Professor Arpad Horvath

Primary objective is to conduct dissertation-oriented research in the following areas: water requirements for transportation fuel production and delivery, energy-water connection, and water consumption impact assessment.

Graduate Student Researcher

2008-2009

Project Title: World Resources Institute Transportation Energy Tool

Advisor: Lee Schipper, Ph.D.

Tasks include developing an excel-based policy analysis tool for determining the greenhouse gas impacts of various transportation-related policies and writing a series of white papers to be published by the World Resources Institute in Washington, DC.

Advisory Board Member

2008

Project Title: Energy Free Home Challenge

Advisor: Iain Walker, Ph.D.

Tasks include estimating the cost for model net zero energy home to determine whether the cost and energy requirements for the competition entrants would be feasible and providing general input on proposed rules, contest logistics, and contest goals.

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Graduate Research Assistant

2007

Project Title: Knowledge Management and Visualization in Support of Vulnerability Assessment of Electricity Production

Advisor: Professors H. Scott Matthews and Lucio Soibelman

Tasks include developing a prototype that integrates spatial and non-spatial data for vulnerability assessment of electricity supply based on coal mine production and rail transportation.

Undergraduate Research Assistant

2004-2006

Project Title: Economic Input-Output Life-Cycle Assessment

Advisor: Professor H. Scott Matthews

Tasks include retrieval and aggregation of Occupational Safety and Health Administration data for integration into the Economic Input-Output Life-Cycle Assessment (EIO-LCA) tool and development of a tutorial for new EIO-LCA users.

Northeast Midwest Institute, Washington, DC USA

Undergraduate Research Fellow

2006

Project Title: Electrical Grid Modernization

Advisor: Diane DeVaul, Ph.D. and Richard Munson

Tasks include collection of information on electrical grid modernization, distributed generation, and broadband over power lines for preparation of a white paper.

CONFERENCE
PAPERS

Roger C. Sathre, Hanna Breunig, Jeffery Greenblatt, Peter Larsen, Thomas E. McKone, Nigel W. Quinn, Corinne Scown (2012). "Spatially-Explicit Water Balance Implications of Carbon Capture and Sequestration." *Proceedings of the 11th Annual Conference on Carbon Capture, Utilization, and Sequestration*, Pittsburgh, PA. April 30-May 3, 2012.

Aurora L. Sharrard, Ashley Nikithser, Corinne Scown, H. Scott Matthews, Melissa Bilec (2007). "The Challenge of Correlating Air Monitor Data with Construction Site Activity: A Pittsburgh Case Study." *Proceedings of the Construction Research Congress*, Grand Bahama Island, Bahamas. American Society of Civil Engineers, Construction Institute. May 6-8, 2007.

Chung Yan Shih, Corinne D. Scown, Lucio Soibelman, H. Scott Matthews, James H. Garrett, Jr., Keith Dodrill, Sandra McSurdy (2007). "Decision Support Framework for Electricity Production Vulnerability Assessment." *Proceedings of the 2007 ASCE Computing in Civil Engineering Confer-*

ence, Pittsburgh, PA, July 24-27, 2007.

CONFERENCE
ORGANIZING

Track Chair and Leadership Committee, International Conference on Sustainable Design, Engineering and Construction, Tempe, AZ, May 2016.

Organizing Committee, International Society for Industrial Ecology 2011 Conference, Berkeley, CA, June 2011.

Organizing Committee, International Symposium on Sustainable Systems & Technologies, Oakland, CA, May 2014.

INVITED TALKS &
CONFERENCE
PRESENTATIONS

“Using life-cycle assessment to guide the development of bio-based fuels, lubricants, rubber, and plastic”, Society of Environmental Toxicology and Chemistry-Europe Annual Meeting, Nantes, France, May 2016.

“Overview of Research at the Joint BioEnergy Institute”, Energy Modeling Forum 33, Global Bio-Energy Policy Scenario Working Group Meeting, Stanford, CA, April 2016.

“Life-Cycle Greenhouse Gas Assessment”, Guest Lecture, Chemical Engineering 90, UC Berkeley, Berkeley, CA, March 2016.

“Life-cycle Engineering”, Guest Lecture, Energy from Biomass, UC Berkeley, Berkeley, CA, November 2015.

“A Whirlwind Tour of Emerging Technology Assessment at LBNL”, LCA XV, Vancouver, Canada, October 2015.

“Closing the Gap Between Basic Research, Technoeconomic Analysis, and Life-cycle Assessment for Bio-based Fuels and Products”, Joint BioEnergy Institute Seminar, Emeryville, CA, June 2015

“Technoeconomic Analysis at JBEI”, Joint BioEnergy Institute, Emeryville, CA, April 2015.

“Life-cycle Greenhouse Gas Assessment”, Guest Lecture, Chemical Engineering 90, UC Berkeley, Berkeley, CA, March 2015.

“Water and Climate Impacts of Transportation Systems”, Keynote at University of Illinois, Urbana-Champaign EWES SRIS Summit, Urbana, IL, April 2014.

“US Water-Energy Nexus: Data gaps, uncertainties, and future projections”, The National Academies Roundtable on Science and Technology for Sustainability, Washington, DC, June 2013.

“The Role of Biomass in Low-Carbon Automotive Transport”, Society of Environmental Toxicology and Chemistry North America, Long Beach, CA, November 2012.

“Life-cycle Assessment at Lawrence Berkeley National Laboratory”, Life-cycle Assessment XII, Tacoma, WA, September 2012.

“Uncertainty and Scenario Analysis in LCA of Emerging Technologies”, Life-cycle Assessment XII, Tacoma, WA, September 2012.

“Life-cycle Assessment of Biofuels for Transportation: Understanding the Effects of Scale”, Society of Environmental Toxicology and Chemistry Europe, Berlin, Germany, May 2012.

“Life-Cycle Water and Greenhouse Gas Implications of Alternative Fuel Production”, Lawrence Berkeley National Lab, Berkeley, CA, January 2012.

“Life-Cycle Water and Greenhouse Gas Implications of Alternative Fuel Production”, Arizona State University, Tempe, AZ, January 2012.

“Sustainable Systems: The Interface Between Infrastructure and the Environment”, University of Illinois Urbana-Champaign, Urbana, IL, December 2011.

“Life-Cycle Water Impacts of Transportation Fuels”, International Society for Industrial Ecology 2011 Conference, Berkeley, CA, June 2011.

“Water Footprint of U.S. Transportation Fuels”, Webinar for the Engineers for a Sustainable World National Chapter, June 2011.

“Biofuels”, Guest lecture given four separate times for UC Extension Courses: “Energy for Sustainability”, “Transportation Sustainability”, 2009 & 2010.

PEER REVIEW ACTIVITIES

EPA STAR Fellowship Review Panel Member

Manuscript Reviewer for Proceedings of the National Academy of Sciences

Manuscript Reviewer for BioEnergy Research (a Springer publication)

Manuscript Reviewer for Environmental Science & Technology (an ACS publication)

Manuscript Reviewer for Environmental Research Letters (an IOP ejournal)

Manuscript Reviewer for Resources, Conservation & Recycling (an Elsevier publication)

Manuscript Reviewer for Energy Policy (an Elsevier publication)

Manuscript Reviewer for Water Resources Research (an American Geophysical Union publication)

Manuscript Reviewer for International Journal of Life Cycle Assessment (a Springer publication)

Manuscript Reviewer for 2007 ASCE Conference on Computing in Civil Engineering

HONORS AND AWARDS

LBNL Director’s Award for Exceptional Achievement: Early Scientific Career, 2015

Invited to join the Balaton Group as a Donella Meadows Fellow, 2015

Carnegie Mellon University Civil & Environmental Engineering Dept. Recent Alumni Achievement Award, 2014

National Science Foundation Graduate Research Fellow, 2007

Graduated from Carnegie Mellon with University Honors and College of Engineering Honors, 2006

UC Berkeley Bears Breaking Boundaries: Energy and Environmental Innovation, 3rd Place, 2008

Carnegie Mellon Stephen Omer Lee Outstanding Engineering & Public Policy Project Award, 2007

Carnegie Mellon Tom Johnson Fellowship, 2006

Carnegie Mellon Advani Memorial Scholarship, 2006

Carnegie Mellon Andrew Carnegie Society Scholarship, 2006

Carnegie Mellon, Civil Engineering H.A. Thomas, Sr. Distinguished Service Award, 2007

PROFESSIONAL
REGISTRATION,
ORGANIZATIONS
AND COMMITTEES

Division Representative, LBNL Women Scientists & Engineers Council
 Member, Society of Environmental Toxicology and Chemistry
 Engineer-in-Training, State of Pennsylvania
 Former President, Associated General Contractors of America, UC Berkeley Chapter
 Former President, American Society of Civil Engineers, Carnegie Mellon Chapter
 Former Vice President, Chi Epsilon Society, Carnegie Mellon Chapter
 Member, Society of Women Engineers, Carnegie Mellon Chapter
 Former Co-President, UC Berkeley Civil & Environmental Engineering Grad Student Society
 Former Executive Board Member, UC Berkeley Graduate Assembly (Graduate Student Government)
 Former Grad Student Representative, UC Berkeley Academic Senate (Supreme Governing Body at Berkeley) Graduate Council
 Former Graduate Student Representative, UC Berkeley Chancellor's Advisory Committee on Sustainability
 Former President, Carnegie Mellon Engineering and Public Policy Student Advisor Committee
 Former Chair, Carnegie Mellon Civil & Environmental Engineering Student Advisory Committee
 Member, Andrew Carnegie Society Scholars

TEACHING
EXPERIENCE**UC Berkeley Extension, USA**

Lecturer **2011**
 Course Title: Energy Use and Climate Change
 Course comprised of five three-hour meetings, including weekly homework and a large project.

Lecturer **2011**
 Course Title: Transportation Sustainability: Life Cycle Assessment
 Course comprised of one six-hour meeting.

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Head Teaching Assistant **2004-2007**
 Course Title: Introduction to Civil and Environmental Engineering
 The job of a head teaching assistant includes teaching a discussion section, managing the graders, holding office hours, and leading one of three major course projects.

Course Advisor **2005-2006**
 Course Title: Introductory/Intermediate Programming
 This course served as the introductory Java programming course in the School of Computer Science. Course advisors are required to hold office hours, grade assignments, and attend all lectures.

OUTREACH

Sustainability-Related Outreach

Carnegie Science Center National Engineers' Week **2006-2007**
 Topic(s): Life-cycle assessment mapping and buoyancy demonstrations Created and managed two display booths for children K-8.

SEED Educational Program **2008**
 Topic(s): Introduction to climate and energy
 Helped develop the curriculum for this after-school educational program aimed at teaching junior high students about energy and climate change.

7th Annual UC Berkeley Sustainability Summit **2010**

Topic(s): Campus-wide discussion about sustainability

Sat on a four-member panel including Vice Chancellor Ed Denton and Vice Provost Cathy Koshland, and answered questions about how the graduate student community is involved in campus sustainability at UC Berkeley. Video of the panel discussion can be found here: <http://sustainability.berkeley.edu/cacs/pages/summits/overview.shtml>

Matching Grad School Choices with Environmental Career Goals **2008**

Topic(s): Panel discussion on how to choose grad schools and degree programs for students interested in sustainability

Organized and sat on this panel discussion for undergraduates interested in attending grad school in areas related to energy and the environment.

Female-Focused Engineering Outreach*Engineering Your Future* **2003-2006**

Topic(s): Basic engineering concepts and demonstrations for high school girls in Pittsburgh, PA
Helped organize and led groups of girls through laboratory demonstrations for this day-long program.

Summer Engineering Experience **2007**

Topic(s): Basic engineering concepts and demonstrations for high school girls in Pittsburgh, PA
Lectured for this two week summer program for 8th and 9th grade girls in Pittsburgh, PA.

High School Day **2004-2007**

Topic(s): Basic engineering concepts and demonstrations for high school girls in Pittsburgh, PA
Lectured for this two week summer program for 8th and 9th grade girls in Pittsburgh, PA.